

Voice at the Point-Of-Maintenance (POM_x)

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What is Voice POMx



- Voice-enabled maintenance tools
- Allows maintainers to passively input and receive aircraft maintenance information using existing FM radios, desktop personal computers or radio frequency (RF) personal display assistants (PDA)
- Currently supports opening jobs, ordering parts and closing jobs associated with unscheduled, on-equipment, flightline maintenance tasks and Depot Evaluation and Inspection process
- Voice recognition engine is speaker independent
 - Does NOT require voice training
 - Accurately recognizes FM net transmissions in noise environments less than 90dB, which equates to the normal flightline environment
 - Up to 95dBs achieved using directional microphones
 - Ear microphones used in conjunction with ear protection are expected to achieve in the area of 120dBs
 - The next release of the KLSS voice engine is expected to achieve a minimum of 100dBs using just FM radios. This equates to engine and AGE operational environments

Voice POMx Using FM Net



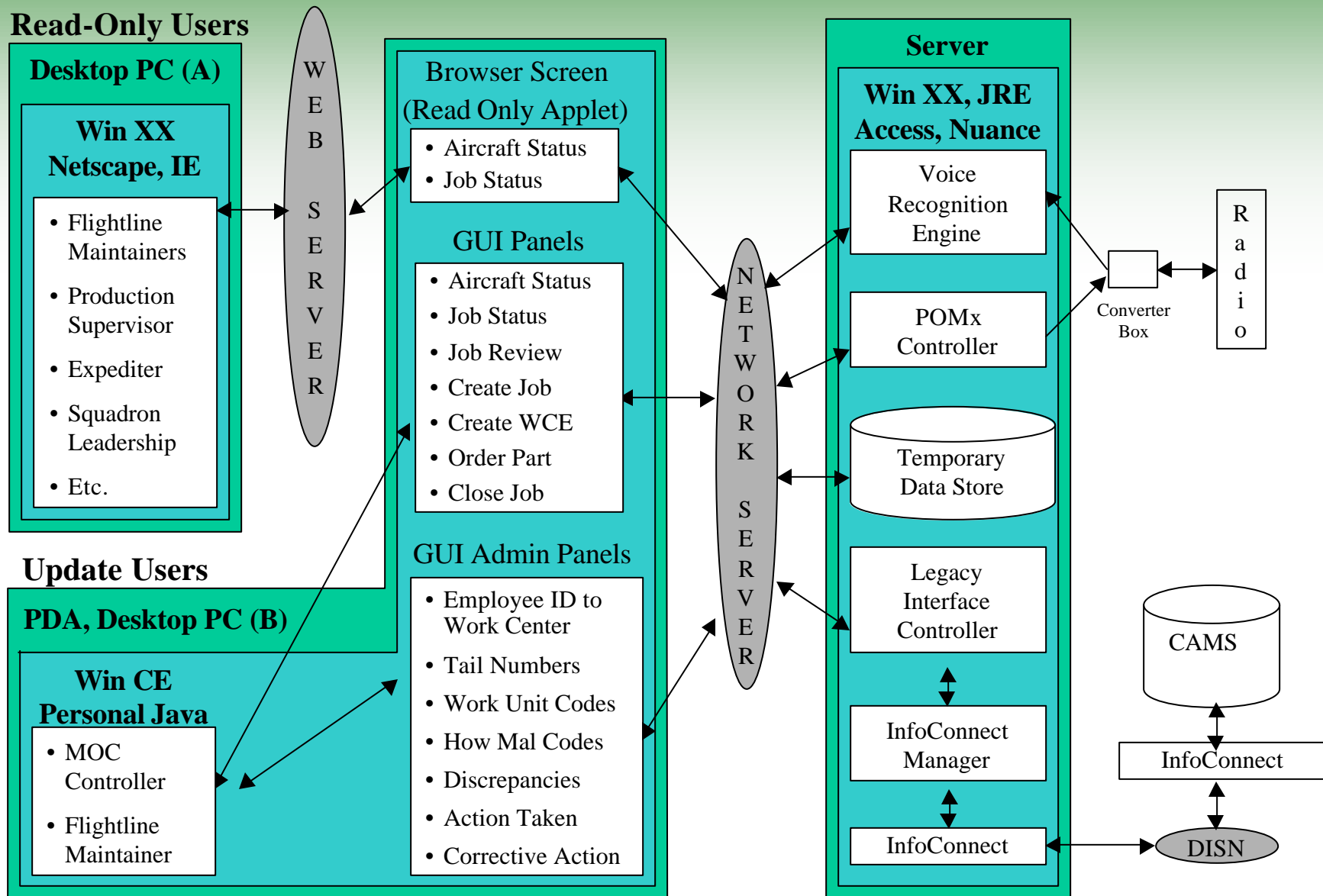
- Voice POMx is a web-enabled, java-based client-server application designed to run on existing base infrastructure
 - Information is passively collected, displayed to a user for review and update as necessary, and then transparently sent to CAMS
 - CAMS returns requested information or applicable error messages
 - Allows user to update information and resubmit to CAMS
 - Approved single session security is used with CAMS
 - All information is available for display using either Netscape TM or Internet Explorer TM
- A temporary data store for job and part information is used (AccessTM)
 - Once a job is closed it no longer resides in the temporary data store
- The legacy system interface component is isolated from the rest of the application for easy migration to future SSG Software Factory architectures like XML
- POMx currently operates with Motorola AstroSabreTM and XTS 3000TM radios, with Fujitsu Pcentra 200TM, and Compaq IPAQTM pocket PC

Voice POMx Using RF Microphone and Headset



- Allows maintenance technician complete hands-free movement in the work environment, without the constraints of carrying paper technical data, portable computer or even a hard wire attached to a computer
- The system actually “reads” to the technician the technical data inspection steps
- Technician communicates back to system if step passed or failed
 - The system then Creates job, orders part or tracks completion of steps
 - Interfaces (i.e., stores, forwards and receives) with legacy (CAMS/PDMSS) systems using the existing infrastructure
- Similar capabilities have been successfully deployed on the E&I portion of the F-15 PDM line at Robins AFB
- Resulted in immediate 33% reduction in inspection process time and increased data accuracy to PDMSS

Architecture



Next Steps



- Migrate Voice POMx data capturing and sharing to all levels of maintenance
- Improved Diagnostics and Verticality of testing requires access and sharing of accurate real-time maintenance data located in disparate legacy systems
 - Data would include; debrief, flight conditions, tail numbers associated with faults, environmental, maintenance actions taken, test station, depot and Original Equipment Manufacture (OEM) repair data
 - The analyses of these data sets must be dynamic, and encompass not only trending associated with built-in-test and false alarms, but account for the inevitable aging of our systems
- Before a technician can troubleshoot a malfunction, whether at a test station, engine or an aircraft, they would use Voice POMx to request a solution set
 - Voice POMx would perform analysis based on the specific failure and audibly present questions, if required, to build a solution set
 - Voice POMx would provide a recommended solution along with procedures to accomplish the repair/task no matter what the level of repair
- Implementation of dynamically created solution sets, and the subsequent need for tech data to support these solution sets, requires we move away from the traditional technical order presentation formats seen today

Advantages of Voice Recognition



- Timely update of aircraft status provided by passive real-time data collection
- Reduction/elimination of data entry errors by improving the man-machine interface
- Reduction/elimination of data latency problems by bringing the data entry to the point of maintenance
- Shared diagnostic data that increase verticality of test and accounts for aging systems
- More productive utilization of personnel by relieving them from lengthy keyboard data entry and research taskings
- Eliminate wasted man-hours at all levels of maintenance spent:
 - Performing false pulls and cannibalization actions
 - Subsequent processing/working serviceable parts and placing a burden on supply
- Further, security and infrastructure constraints aren't a concern with FM Net as it is already in the field and meets all security and deployment requirements